

REMARKS

Claims 1-10 are pending. Reconsideration in view of the following remarks is respectfully requested.

Objection

The disclosure is objected to because of a minor typographical error in page 9, paragraph [0048]. Accordingly, Applicants have corrected the typographical error and changed the word “course” to read “coarse.” Therefore, Applicants respectfully request withdrawal of the objection.

Claim Rejection – 35 USC § 102

Claims 1, 2 and 5-10 are rejected under 35 U.S.C. § 102(e) as allegedly being anticipated by Nishi et al. (US Patent No. 6,341,007). Applicants respectfully traverse this rejection for at least the following reasons.

The Office Action contends that Nishi et al. discloses in Figs. 1-4 a lithographic projection apparatus and a method for calibrating a lithographic projection apparatus comprising all the elements recited in claims 1 and 10. In particular, the Office Action contends that Nishi et al. teaches identifying a set of two or more reference position of an object table (WS1, WS2) with a first detection system (24a) with a first position measuring system of interferometer (16, BI1X); identifying the reference positions of the object table with the second detection system (24b) with a second position measuring system of interferometer system (18, BI2X) and a processor 90 correlating the first and second position measuring system using the measurement reference positions. Applicants respectfully disagree.

Claim 1 has been amended to clarify the claim language further. Claim 1 recites, *inter-alia*, “calculating a corrected set of measurements for said first and said second position measuring systems using the measurements of the reference positions.” By calculating a corrected set of measurement for the first and the second position measuring systems for the first and the second position measuring systems, it is possible, for example, to correct for scaling offsets in the measurement systems which allows to improve the overall accuracy of the positioning systems.

Nishi et al. merely teaches wafers W1 and W2 are fixed on wafer stages WS1 and WS2 and fiducial mark plates FM1, FM2, on which fiducial marks are formed, are placed on

upper surfaces of wafer stages WS1 and WS2 to be at the same height as wafers W1 and W2. The fiducial mark plates, in Nishi et al., are used when the reference position of each of the wafer stages is detected (col. 45, lines 38-49 in Nishi et al.). Alignment systems 24a and 24b, in Nishi et al., perform measurement of the position in the X, Y two-dimensional direction of the reference mark on the fiducial mark plate and the alignment mark on the wafer (col. 46, lines 23-28 in Nishi et al.) and a control unit 90 calculates the coordinate position of the marks MK2 on the fiducial mark plates FM1 and FM2.

Nishi et al., however, measures the reference position of two fiducial marks on two distinct wafer stages WS1 and WS2 and two alignment systems 24a and 24b are used to measure the positions of the two distinct marks on each wafer stage. Specifically, alignment system 24a only ever measures a fiducial mark on fiducial mark plate FM1 on wafer stage WS1 and alignment system 24b only ever measures a fiducial mark on fiducial mark plate FM2 on wafer stage WS2. Furthermore, Nishi et al. merely uses the control unit 90 to calculate the coordinate position of the marks MK2 on the fiducial mark plates FM1 and FM2 of the two wafer stages WS1 and WS2. In addition, Nishi et al. merely uses main control unit 90 to calculate the relative positional relationship for the respective shots with respect to the mark MK2 by subtracting the coordinate position of the reference mark MK2 from the coordinate positions of the respective shots.

In fact, Nishi et al. explicitly states that it is not necessary for one of the position measuring systems to monitor the position of one stage during the movement of the stage between two sections and there is no need to transmit data between the position measuring systems, (see, col. 9, lines 34-38 in Nishi et al.). Therefore, Nishi et al. does not correlate the measurements of the position measuring system at the measuring station and the measurements of the position measuring system at the exposure station. Nishi et al. merely relies on the measurements at the measurement station and “trusts” these measurements to determine the relative positions of exposure sections on the substrate. Consequently, Nishi et al. does not disclose, teach or suggest “calculating a corrected set of measurements for said first and said second position measuring systems using the measurements of the reference positions,” as recited in claim 1.

Claim 10 recites, *inter-alia*, “a first position measuring system to measure a position of one of said first and second object table; a first detection system to identify a reference position of said one object table within a range of said first position measuring system; a second position measuring system to measure a position of said one object table; a second

detection system to identify a reference position of said one object table within the range of said second position measuring system; and a processor in communication with said first and said second position measuring system and said first and said second detection system, the processor being configured and arranged to calculate corrected measurements for said first and said second position measuring system.”

Similarly, for at least the reasons provided above in claim 1, Nishi et al. does not disclose, teach or suggest a processor configured and arranged to calculate corrected measurements for the first and second position measuring systems.

Consequently, for at least the above reasons, Nishi et al. does not disclose, teach or suggest the subject matter recited in claims 1 and 10.

Therefore, Applicants respectfully submit that claims 1 and 10, and claims 2 and 5-9 which are directly or indirectly dependent from claim 1, are patentable and respectfully request that the rejection of claims 1, 2 and 5-10 under § 102(e) be withdrawn.

**Claim Rejection – 35 USC § 103**

Claims 3 and 4 are rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over Nishi et al. (US Patent No. 6,341,007) in view of Tanigushi et al. (US Patent No. 6,151,122). Applicants respectfully traverse this rejection for at least the following reason.

The Office Action contends that Nishi et al. discloses the claimed invention but concedes that Nishi et al. does not disclose a reference position identified by detecting marks on a workpiece and the mark is a diffractive mark. The Office Action contends, however, that Tanigushi et al. discloses in Figure 9(c) and col. 24, lines 47-65, reference marks located on a workpiece and diffractive marks used to indicate position of the marks and thus it would have been obvious to one of ordinary skill in the art to provide the reference marks of Tanigushi et al. to the invention of Nishi et al. Applicants respectfully disagree.

Claims 3 and 4 are directly or indirectly dependent from claim 1. Therefore, for at least the reasons presented above in claim 1, Nishi et al. does not disclose, teach or suggest the subject matter recited in claims 3 and 4. Tanigushi et al. fails to overcome the deficiencies noted above in Nishi et al. Consequently, neither Nishi et al. nor Tanigushi et al., alone or in combination, disclose, teach or suggest the subject matter recited in claims 3 and 4.

Therefore, Applicants respectfully submit that claims 3 and 4 are patentable and respectfully request that the rejection of claims 3 and 4 under § 103(a) be withdrawn.

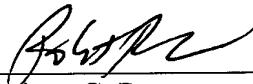
**CONCLUSION**

In view of the foregoing, the claims are now in form for allowance, and such action is hereby solicited. If any point remains in issue which the Examiner feels may be best resolved through a personal or telephone interview, he is kindly requested to contact the undersigned at the telephone number listed below.

All objections and rejections having been addressed, it is respectfully submitted that the present application is in a condition for allowance and a Notice to that effect is earnestly solicited.

Respectfully submitted,

PILLSBURY WINTHROP LLP

By: 

Robert C. Perez  
Reg. No.: 39,328  
Tel. No.: (703) 905-2159  
Fax No.: (703) 905-2500

JSB/RCP/KG

1600 Tysons Boulevard  
McLean, VA 22102  
(703) 905-2000